$$\therefore\ S_m = \frac{P^{m+1}}{m+1}[1-(1/a)][1-(1/b)][1-(1/c)]\ldots\ldots$$

$$+B_1\frac{m}{2\,!}P^{m-1}(1-a)(1-b)(1-c)\ldots\ldots$$

$$-B_3\frac{m(m-1)(m-2)}{4\,!}P^{m-3}(1-a^3)(1-b^3)(1-c^3)\ \ldots\ldots$$

$$+B_5\frac{m(m-1)(m-2)(m-3)(m-4)}{6\,!}P^{m-5}(1-a^5)(1-b^5)(1-c^5)\ \ldots\ldots$$

$$-\ldots\ldots+\ldots\ldots-\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

When $m=1$, $S_1=\frac{1}{2}P^2[1-(1/a)][1-(1/b)][1-(1/c)]\ldots.$

When $m=2$, $S_2=\frac{1}{3}P^3[1-(1/a)][1-(1/b)][1-(1/c)]..+\frac{1}{6}P(1-a)(1-b)(1-c)..$

When $m=3$, $S_3=\frac{1}{4}P^4[1-(1/a)][1-(1/b)][1-(1/c)]..+\frac{1}{4}P^2(1-a)(1-b)(1-c)..$

When $m=4$, $S_4=\frac{1}{5}P^5[1-(1/a)][1-(1/b)][1-(1/c)]..+\frac{1}{3}P^3(1-a)(1-b)(1-c)..$
$-\frac{1}{30}P(1-a^3)(1-b^3)(1-c^3)\ldots.$

When $m=5$, $S_5=\frac{1}{6}P^6[1-(1/a)][1-(1/b)][1-(1/c)]..+\frac{5}{12}P^4(1-a)(1-b)(1-c)..$
$-\frac{1}{12}P^2(1-a^3)(1-b^3)(1-c^3)\ldots.$

When $m=6$, $S_5=\frac{1}{7}P^7[1-(1/a)][1-(1/b)][1-(1/c)]..+\frac{1}{2}P^3(1-a)(1-b)(1-c)..$
$-\frac{1}{6}P^3(1-a^3)(1-b^3)(1-c^3)\ldots.\frac{1}{42}P(1-a^5)(1-b^5)(1-c^5)\ldots.$

PROBLEMS FOR SOLUTION.

ALGEBRA.

83. Proposed by J. MARCUS BOORMAN, Consultative Mechanician, Counselor at Law, Inventor, Etc., Woodmere, Long Island, N. Y.

Solve $x^2+y=8\ldots\ldots(1)$; $y^2+x=69\ldots\ldots(2)$, true to four decimals.

84. Proposed by BENJ. F. YANNEY, A. M., Professor of Mathematics in Mount Union College, Alliance, O.

On the present electoral basis, if all the electoral votes of each State are cast solid for one or the other of two presidential candidates, how many conbinations of States are possible for a total of 273 votes for the winning candidate?

*** Solutions of these problems should be sent to J. M. Colaw, not later than May 10.

GEOMETRY.

91. Proposed by LEONARD E. DICKSON, Ph. D., Instructor in Mathematics in the University of California, Berkeley, Cal.

If a point A remain fixed while a point B moves along a given straight line, prove that the locus of the vertex C of the triangle ABC, similar to a given triangle and lying always on the same side of AB, is a straight line. Verify geometrically for the case in which the angles at A and C remain equal.